

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows:

1-13. (Cancelled)

14. (New) An x-ray imaging arrangement for obtaining diagnostic radiographic images, said arrangement comprising:

an x-ray emission source located at a spaced-apart distance from an x-ray detector and an x-ray beam collimator positioned between said x-ray emission source and said x-ray detector;

a silicon substrate based radiation detector comprising a silicon detector wafer having a mechanically damaged edge zone characterized by the production of interfering background current during radiation detection;

a plurality of pixel sensor strips being arranged on said silicon detector wafer, each at a spaced-apart, lateral distance from said mechanically damaged edge zone, said plurality of pixel sensor strips collectively defining a substantially planar active x-ray detection area of said silicon detector wafer;

a guard ring being at least partially located laterally between said pixel sensor strips and said mechanically damaged edge zone and thereby establishing a dead area of said silicon detector wafer extending interiorly from said guard ring toward said pixel sensor strips; and

said collimator being configured to pass an x-ray beam having a cross-sectional area measured perpendicular to said x-ray beam smaller than said active x-ray detection area.

15. (New) The invention as recited in claim 14, wherein said substantially planar active x-ray detection area is oriented at an angle with respect to said x-ray beam so that no x-rays impinge upon said dead area.

16. (New) The invention as recited in claim 15, wherein said plurality of pixel sensor strips are arranged with approximately 25 μm to 100 μm distance between adjacent pixel sensor strips whereby said x-ray imaging arrangement constitutes a means for producing mammography diagnostic radiographic images.

17. (New) The invention as recited in claim 15, wherein said thickness of said silicon detector wafer ranges between approximately 300 μm to 500 μm .

18. (New) The invention as recited in claim 16, wherein said thickness of said silicon detector wafer is approximately 300 μm and said x-ray emission source emits x-ray energy at approximately 25keV.

19. (New) The invention as recited in claim 18, wherein said substantially planar active x-ray detection area is oriented at approximately 87 degrees with respect to said x-ray beam.

20. (New) The invention as recited in claim 16, wherein said detector is connected to an applied bias voltage of approximately $\pm 80\text{V}$.

21. (New) The invention as recited in claim 14, wherein all of said plurality of pixel sensor strips in said detector are arranged at a single, substantially uniform level with respect to said silicon detector wafer without overlap with other pixel sensor strips.

22. (New) The invention as recited in claim 22, wherein said applied bias voltage ranges between approximately 10V and 1000V.